



Bachelor of Science in Cybersecurity Analytics and Operations

The Cybersecurity Analytics and Operations Bachelor of Science program prepares students for a career that focuses on protecting digital information from attack through cyberdefense strategies. With a foundation in mathematics and computer programming, students will be prepared to recognize, analyze, defend against, and manage risks related to a wide range of threats to online information, data stores, and networks. Whether it is the hacking of critical datasets by a nation-state, the theft of personal information by cybercriminals, or cyberattacks by terrorist groups or other aggressors, students will analyze security issues from the perspective of human and information systems. They'll learn to anticipate and identify threats through the mastery of technology, articulate potential impacts to stakeholders, and ensure the safety of online information.

The most successful students in this major are:

Adaptable • Analytical • Collaborative • Detail-oriented • Organized • Problem solvers • Strong communicators

Entrance to major requirements:

Students must choose their major by the end of their second year. To enter this major, students must have earned between 40-70 Penn State credits and at least a 3.00 cumulative GPA at the time of applying to the major. Please check with your Penn State adviser for the most current information.

An emerging field

Leaders at all levels of government and corporations are raising cybersecurity concerns across the globe, highlighting the growing need for professionals with the skills to protect against threats to digital information and assets. In fact, there are more positions open in the field of cybersecurity than there are qualified candidates to take them. IST's Cybersecurity Analytics and Operations program will prepare students to meet this need.



Graduates earning this degree will have the technical expertise to analyze security issues and the communication skills to disseminate their knowledge to a variety of audiences. They will be uniquely prepared to lead in protecting the information, computers, and networks upon which so many people, organizations, and countries depend on for their day-to-day activities.

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Students pursuing a degree in Cybersecurity Analytics and Operations will take courses based around three fundamental concepts: technical cyberdefense strategies, risk management, and data-driven cybersecurity analytics. With foundations in mathematics and computer programming, students will gain the expertise needed to both employ and discuss cybersecurity practices in a variety of fields. They'll also learn how to apply their technical knowledge through courses focused on computer systems, malware analysis, network security, forensics, incident response, and the legal environment of cybersecurity.

SELECTED REQUIRED COURSES:

Students in the Cybersecurity Analytics and Operations degree program will lay the foundation for their careers by taking a variety of required courses, such as those described below:

- **CYBER 342W – Incident Handling and Response**
Master the standards and policies related to organizational responses to cybersecurity incidents through a variety of individual and group writing projects for industry-based objectives.
- **CYBER 362 – Cyber Analytics Studio**
Apply programming skills to develop cybersecurity data analytics. Use programming languages like R and Python to contextualize and visualize cybersecurity data.
- **CYBER 366 – Malware Analytics**
Gain an essential understanding of malware behavior and effects through hands-on labs. Reverse engineer malware and learn methods for malware analysis, classification, and clustering to identify new threats.
- **CYBER 440 – Capstone Course**
Take on the technical challenge of identifying and understanding an advanced persistent threat through large scale data. Communicate your findings to high-level executives through analytics and a discussion of impacts.

CUSTOMIZE YOUR FOCUS:

Within the major, students can choose a series of courses that will allow them to focus on a particular field in cybersecurity, developing skills in a specialized application area. Examples of these focus areas include:

- **Economics**
- **Geopolitics**
- **Healthcare**
- **Law and Policy**

Our graduates are in high demand.

Graduates from the College of IST have technical expertise and business savvy, giving them the versatility employers want.

Their unique skills add value to every field as the need for professionals who can bring IT knowledge to businesses and organizations grows.

Pursue meaningful and diverse careers.

With two career fairs for students in our majors and more than 300 companies actively recruiting them, Cybersecurity Analytics and Operations graduates are prepared for careers like:

- Cybersecurity Analyst
- Cyberthreat Advisor
- Digital Network Exploitation Analyst
- Forensics Analyst
- Incident Responder
- Infrastructure Analyst
- Penetration Tester
- Security Engineer



PennState
College of Information
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